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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,394

11/01/2006

Ralph Edmund Harris

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EXAMINER

FIGUEROA, JOHN J

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

01/21/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,394	Applicant(s) HARRIS ET AL.	
	Examiner JOHN J. FIGUEROA	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-74 is/are pending in the application.
- 4a) Of the above claim(s) 54,55,58,59 and 65-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-53,56,57,60-64 and 71-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/27/2006; 01/08/2007; 04/13/2007; 04/24/2007;</u> | 6) <input type="checkbox"/> Other: _____ |

05/31/2007 and 07/02/2007

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)

Office Action Summary

Part of Paper No./Mail Date 20100116

DETAILED ACTION

Election/Restrictions

1. Applicant's election in the response dated October 30, 2009 to prosecute the claims of Group I (40-64 and 70-74) and the election of hydrolyzing enzyme as the species of polymer breaker to be examined is hereby acknowledged.
2. Accordingly, claims 40-53, 56, 57, 60-64 and 71-74 have been examined in the instant action. Claims 64-69 have been withdrawn from consideration as drawn to a non-elected invention and claims 54, 55, 58, 59 and 70 have been withdrawn as drawn to a non-elected species.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 40-47, 49-53, 56, 57, 63 and 64 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 41-58 and 60 of copending Application No. 10/594,568 ('568 application).

The conflicting claims are not identical because the presently claimed invention is drawn to a process involving the use of an oil field fluid in a drilling process (see, e.g., independent claim 40) whereas the process in the '568 application involves using a fluid in a process of treating a well bore (see, e.g., independent claim 41). However, the specification of the '568 application discloses the process of treating a well bore to encompass oil field applications involving drilling steps and mud pumps, i.e., the treatment process can implicitly contain a drilling step (See, e.g., page 5, line 29 to page 6, line 11; and page 11, lines 17-24 of the specification of the '568 application)

Although they are not identical because independent claim 40 of the present application recites a drilling step and the claims of the '568 do not expressly do so, they are not patentably distinct from each other because both sets of claims are drawn to a process for disrupting a filter cake in an underground formation (that can include a drilling step) by providing into said formation a fluid that comprises, *inter alia*, an aliphatic polyester or lactic/glycolic polymer that hydrolyzes to acid in the presence of water and a hydrolyzing enzyme as a polymer breaker, wherein the claims of the '568 application can implicitly contain a drilling step as suggested in its specification as discussed above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C.103 that form the basis for the rejections under this section made in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 40-53, 56, 57, 60-64 and 71-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2000/57022 A1 to Harris et al. (submitted previously by Applicant in the IDS of 9/27/2006) in view of either USPN 7,275,596 B2 to Willberg et al. (hereinafter 'Willberg') or U.S. Patent Appl. Publ. No. 2004/0094300 A1 to Sullivan et al. (hereinafter 'Sullivan').

For purposes of the instant Office Action, Examiner will be relying on the corresponding United States patent of this Harris et al. PCT application, namely USPN 6,763,888 B1 (hereinafter 'Harris').

Harris discloses a method for treating an underground formation comprising introducing into said formation a fluid comprising water; an ester; and a polymer breaker, wherein the ester hydrolyzes to produce an organic acid to dissolve acid soluble material present in the underground formation (such as in a filter cake produced by hydraulic fracturing), and wherein the polymer breaker degrades polymeric material present within the formation, such as in a drilling application wherein a filter cake is

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formed after drilling. (Abstract; col. 1, lines 4-24; col. 1, line 49 to col. 2, line 36; col. 4, lines 9-16; col. 7, lines 50-62; col. 8, lines 37-45) This method provides an efficient process for removing a filter cake over long horizontal intervals that is environmentally acceptable by utilizing components that are of low environmental impact and for removal of other damaging materials. (Col. 2, lines 57-67)

Harris discloses that to obtain sufficient dissolution of the filter cake, it is necessary that a minimum of several percent w/v of acid is produced, typically of at least 1 to 20% w/v or higher. (Col. 2, lines 12-30) The polymer breaker is present in the fluid in sufficient amount to have a substantive effect on the polymeric material present that results in the breaking of the polymer over a period of several hours to allow effective placement of the fluid, such as 0.005 to 60 kg/m³. (Col. 2, lines 31-59)

Harris further discloses that suitable esters have low toxicity, high flash point, pH of about 3-7 and upon use have health and safety and environmental advantages, such as hydrolyzing enzymes and oxidative breakers (such as calcium peroxide) present in about 1 to 5% w/v in water. (Col. 2, line 60 to col. 3, line 20; col. 4, lines 17-27; col. 4, line 63 to col. 5, line 10; col. 5, lines 24-64) The acid produced according by hydrolyzation is an organic acid, particularly an aliphatic carboxylic acid, wherein the ester can be a lactone that provides an acid with a hydroxyl substituent. (Col. 3, lines 52-64) Chelating compounds may be included in the fluid such as malonic acid, oxalic acid or succinic acid, ethylenediaminetetraacetic acid (EDTA) nitriloacetic (NTA) citric acid and hydroxyacetic acid to assist in the breaking of cross-linked polymers in combination with other polymer breakers, wherein some of the acids produced from the

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hydrolysis of the ester may be able to dissolve certain types of oilfield scale, such as calcium sulphate. (Col. 4, lines 28-42)

Harris also discloses oxidative breakers that can be used are those known in the art to react with polysaccharides to reduce their viscosity or disrupt filter cakes, such as peroxides, persulphates, perborates, percarbonates, perphosphates, hypochlorites, persilicates and hydrogen peroxide adducts such as urea hydrogen peroxide and magnesium peroxide, particularly sodium percarbonate and sodium perborate (Col. 4, lines 50-62) The composition can be used to remove damage caused by a filter cake comprising, for example, calcium carbonate (bridging agent), starch, xanthan and/or biofilm. (Col. 6, lines 26-46) More than one ester or polymer breaker may be incorporated into the formulation depending on the nature of the formation damage and the type of treatment. (Col. 7, lines 33-47)

However, Harris does not teach the ester to be a polymeric or the ester to be, for example, in the form of a bead or a fiber.

Willberg teaches a method for minimizing the amount of a metal crosslinked viscosifier necessary in a drilling/hydraulic fracturing process that comprises proppants or gravel by using fibers to aid in transporting, suspending and placing proppants or gravel in viscous carrier fluids otherwise having insufficient viscosity to prevent particulate settling. (Abstract; col. 2, lines 34-47) The fibers in Willberg have properties optimized for proppant transport but degrade after the treatment into degradation

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products that do not precipitate in the presence of ions in the water such as calcium and magnesium. (Abstract; col. 2, lines 34-46)

Suitable fibers taught in Willberg are substituted and unsubstituted lactides; glycolide; polylactic acid; polyglycolic acid; copolymers of polylactic acid and polyglycolic acid; copolymers of glycolic acid with other hydroxy-, carboxylic acid-, or hydroxycarboxylic acid-containing moieties; and copolymers of lactic acid with other hydroxy-, carboxylic acid-, or hydroxycarboxylic acid-containing moieties, wherein the fibers have a length of about 2 to about 25 mm, and degrade at formation temperature in a time between about 4 hours and 100 days. (Col. 2, lines 47-59; col. 5, lines 24-67; Fig. 1; Example 1) The transition metal polymer system can be a crosslinked borate- or zirconium-guar gum system. (Col. 8, line 33 to col. 9, line 31) The treatment system can be added to various forms of fluid and can be added prior to, or after, the first fluid treatment having been injected into the well, such as post-flush. (Col 11, lines 9-20; col. 13, lines 6-23)

Similarly, Sullivan discloses a method of treating a formation by providing a stimulation treatment further comprising a proppant slurry in a viscoelastic surfactant-based carrier fluid, wherein the fluid is injected above fracturing pressure to create one or more fractures to form a filter cake that includes a solid base-soluble material, wherein the solid base-soluble material is degraded with a solid base-soluble material degradation agent, and wherein a proppant slurry is injected in a second stage. (Abstract; Page 2, [0016]; Examples 1 and 2) The solid base-soluble material degradation agent is a base such as alkali metal/ ammonium alkoxide; carbonate; or

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hydroxide, the carrier fluid can contain a pH buffer; or a fluid loss additive, and the solid base material can be lactide; glycolide; polylactic acid; polyglycolic acid; copolymers and copolymers thereof. (Page 2, [0017]) These solid-based materials and fluid-loss control agents can be in the forms of fibers. (Page 7, [0044])

Sullivan further discloses the treatment fluid further containing fibers or other bridge promoting material from about 0.5 to 5 weight percent of the composition, wherein the fiber material can be organic polymeric material. (Page 8, [0053] to [0057]) In Example 1, Sullivan discloses the fluid containing polyglycolic acid. Additives are added in an optimal concentration, such as fluid-loss control agents in the form of said fibers (such as lactide and glycolic copolymers) to control proppant flowback and to aid in their transport, wherein the concentration of fibers and choice of fibers depend on, *inter alia*, cost, availability and effect on friction pressure. (Page 2, [0012]; page 7, [0044] to [0052]); page 8, [0053] to [0057])

Therefore, it would have been obvious to a person of ordinary skill in the art at the time that the claimed invention was made to inject, for example, Sullivan or Willberg's lactide/glycolic derivative fiber system to assist in forming the filter cake in the drilling process disclosed in Harris. It would have been obvious to one skilled in the art to include an optimal concentration of fibers to attain a resultant treatment fluid having enhanced gel viscosity and proppant settling properties as taught by Sullivan or Willberg.

Thus, the present claims are unpatentable over Harris and either Sullivan or Willberg.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN J. FIGUEROA whose telephone number is (571)272-8916. The examiner can normally be reached on Monday-Thursday 8:00-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796

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JJF/JJS